BRIEFER ARTICLES

BISPORANGIATE CONES OF PINUS MONTANA

(WITH ONE FIGURE)

In the latter part of June 1915 the writer found 3 clusters of bisporangiate cones of *Pinus montana* on a tree along the University Drive, Madison, Wisconsin. Nearly all the cones of each cluster bore both macrosporophylls and microsporophylls, the latter being in every case on the lower portion of the cone. The macrosporophylls were borne in most cases on only the upper portion of the cone. In a few instances the cones were almost wholly staminate or pistillate. The sporophylls and spore sacs appeared to be normal in every respect. No abnormalities were observed in the pollen grains which were stained for a microscopical examination. For the past two years the same tree has failed to produce cones of the type described.

FIG. 1.—Cluster of bisporangiate cones of *Pinus montanum;* darker portion pistillate, lighter portion staminate; reduced one-half.

Bisporangiate cones have been reported in only one other species of pine, namely, in *P. maritima* by GOEBEL (1900). However, in a number of other gymnosperms such cones have been described. More than 50 years ago DICKSON (1860) reported them in *Picea excelsa*, later SHAW (1896) in *Sequoia*, and more recently RENNER (1904) in *Juniperus communis*, and HILL and DE FRAINE (1909) in *Pseudotsuga Douglasii*. In every instance, thus far reported, the microsporophylls and macrosporophylls occupied the same relative positions on the cone as in *Pinus montana*.—W. N. STEIL, *University of Wisconsin, Madison, Wis.*